

April 1970

Brief 70-10170

NASA TECH BRIEF



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Division, NASA, Code UT, Washington, D.C. 20546.

Umbilical Disconnect Actuator

The innovation described in this Tech Brief is a novel method for protecting sensitive equipment when squibs are fired.

The device illustrated in the figure is capable of disconnect by either squib (explosive device), or manually should a non-firing condition exist. A combination of explosive discharge and spring stored energy

provides positive operation of the disconnect actuator for separating connected umbilical cables. Contamination of sensitive equipment when the squibs are fired is prevented by the use of O-rings which retain the debris of squib discharge within the device.

As shown in the figure, a pair of squibs are attached to the actuator outer housing. The main parts of the device are the outer housing, concentric ball guide, inner housing and a concentric piston. Either squib is capable of producing enough power to release and actuate the disconnect device, but two squibs are used to provide redundancy.

Notes:

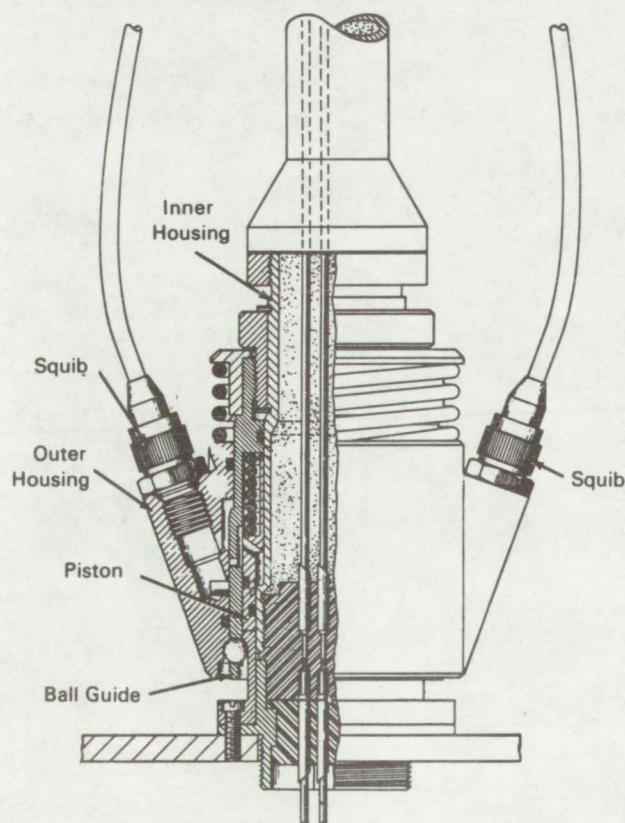
1. The information contained in this Tech Brief should be of interest to personnel working with explosive disconnect devices.
2. Requests for further information may be directed to:

Technology Utilization Officer
NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B70-10170

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: Allan R. McDougal and
Douglas P. Davis, of
Caltech/JPL
under contract to
NASA Pasadena Office
(NPO-11202)
Category 07



Umbilical Disconnect Actuator